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MANUFACTURES.

No. I.

IMPROVEMENTS IN WEAVING WIDE VELVET.

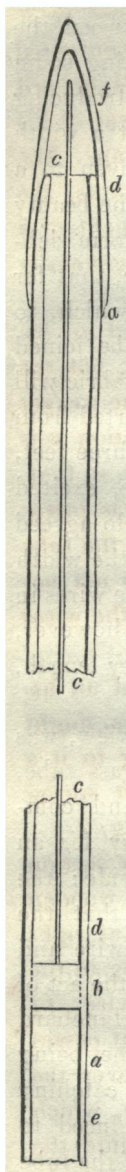
1. *The SILVER ISIS MEDAL and FIVE POUNDS were presented to Mr. C. HANCHARD, 35 Sebright Street, Bethnal Green.*
2. *The Sum of FIVE POUNDS was given to Mr. JAMES COLE, 38 Sebright Street, Bethnal Green.*
3. *The Sum of FIVE POUNDS was given to Mr. J. SODO, 6 Sebright Street, Bethnal Green.*

For their respective shares in the Invention and Improvement of a Tube to be used in Weaving Wide Silk Velvet.

IN all fabrics that are woven with a pile, such as plush and velvet, it is necessary to introduce two wires in succession, on which the rows of loops are cast: a groove is formed along the upper part of each wire, in order to guide the point of a sharp knife, the action of which is to liberate continuously the penultimate wire, by dividing each loop into two equal threads or filaments, the whole of such threads making the pile. In velvet, the pile is short and very thick set; the wires therefore must be very thin, and, of course, flexible. The fineness of the

wires renders it difficult to introduce them between the threads of the warp and of the pile without pushing some of the threads out of their places, and thus introducing blemishes into the texture of the velvet, so that a width of twenty inches is the utmost that can be given to a piece of velvet under ordinary circumstances. The beauty of velvet depends greatly on the unbroken uniform richness of its surface; and it is evident, therefore, that for certain articles of dress, as ladies' shawls, in which, to obtain the necessary size, two breadths must be joined together, much of the peculiar character of this fabric will be sacrificed. Some time ago, there were imported from France a few pieces of velvet, of the width of three feet, which commanded a high price, and, of course, excited the emulation of our English weavers. Mr. Sodo agreed with a London house to make some velvet, of the width of forty inches; which he effected, introducing the wires in the usual way. The great time and dexterity, however, required in inserting wires of such extraordinary length, was a serious obstacle to success.

Mr. Hanchard, having the same object in view, was induced to put the wires in a blunt-pointed brass tube, closed at the further end, the smoothness and comparative inflexibility of which rendered it easy for an assistant to insert it in a warp forty inches wide: the wire projected a little beyond the tube, so that the weaver had no difficulty in laying hold of the wire and retaining it in its place, while the tube was in the act of being withdrawn. With this apparatus Mr. Hanchard worked for about a fortnight, during which time, being occasionally embarrassed by the head of the wire catching in and deranging the warp threads, he was induced to proceed a step further, and placed on the end of the tube



a conical cap, which, by enclosing the end of the wire, prevented all injury to the warp. This improvement, however, was obtained at the cost of the time required on the part of the weaver to take off the cap and lay it on one side, within reach of his assistant, before the former could lay hold of the projecting wire. The advantage gained, however, was worth more than the time expended.

In the accompanying figure, *aa* is a section of the tube, half the width of that in actual use; *ccc* is the wire, the length of which must be a little more than the width of the warp; *b* is a plug of cork, or any other soft substance, against which the end of the wire abuts; the tube being longer than the wire, it is easy to adjust the plug, so that the wire shall project just enough from the end of the tube; *f* is the cap which covers the end of the tube, and encloses the head of the wire. With a tube and cap similar to the above, Mr. Hanchard made seven-quarter velvet for Messrs. Ratcliff and Dickins; and, as he got a very good price for it, kept his apparatus secret.

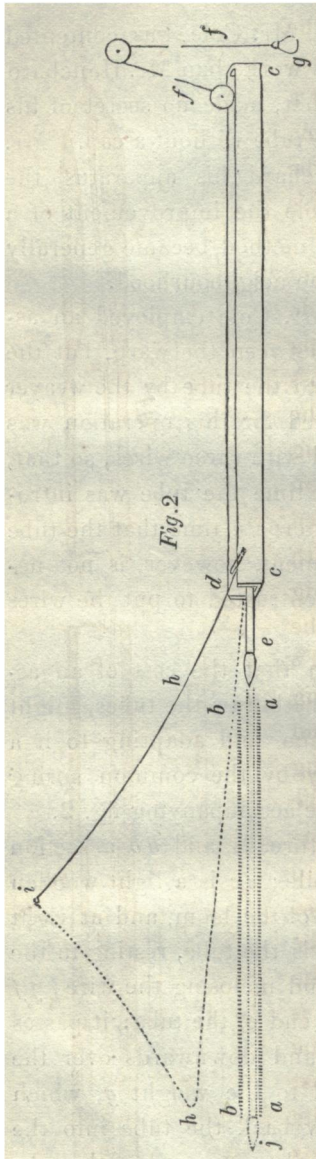
Mr. Cole, a neighbour of Mr. Hanchard, and working for the same employers, being made acquainted with Mr. Hanchard's success, was induced to turn his thoughts to the manufacture of wide velvet, and, apparently without any knowledge of Mr. Hanchard's apparatus, invented a tube, open at one end, into which the wire being put, thus enabled him

also to produce wide velvet. Mr. Cole was contented with a less remuneration for his work than Mr. Hanchard had obtained, and, from the first, made no secret of his apparatus, which consisted of a tube without a cap. Mr. Cole having shewn Mr. Hanchard his apparatus, the latter communicated to Mr. Cole the improvement of a cap to the tube, and thus the method became generally known among the weavers in the neighbourhood.

Both Mr. Hanchard and Mr. Cole employed an assistant to introduce the tube between the warp, but the wire, when cut out, was put into the tube by the weaver himself. Half the time required for this operation was saved by Mr. Cole, who worked with three wires, so that, instead of cutting out one every time the tube was introduced, he cut out two every alternate time that the tube was introduced. This arrangement, however, is not necessary where the assistant is entrusted to put the wires into the tube.

Mr. J. Sodo was of opinion that the cost of an assistant (a boy), to put in and withdraw the tubes, might be saved by using a single tube, and adapting to it a contrivance suggested probably by the common spring shuttle. It is represented in the accompanying fig. 2.

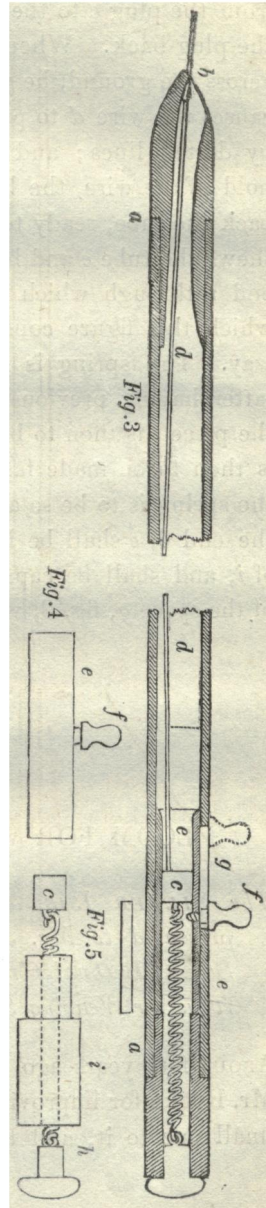
aa is a section of the warp-threads, and *bb* a section of the threads that form the pile; *cc* is a light wooden trough supported on the edge of the loom, and at right angles to the warp-threads; *e* is the tube, resting in the trough, terminated by a cap, and inclosing the wire; *ff* is a cord fastened to the further end of the tube: it passes upward over the first pulley, and downwards over the second; and is finally fastened to the weight *g*, which must be heavy enough to draw back the tube into the trough: *h* is a cord fastened to the same end of the tube



as *f* is : it is led along the trough, under the cross-bar *d*, and is tied to some convenient place, as *i*. When the wire is to be introduced, the weaver takes hold of the cord at *h* with one hand, and brings it into the dotted position *h*, which introduces the tube above the warp, as shewn by the dotted lines *j* : he then, with the other hand, takes the cap off the tube, lays it on a ledge, and afterwards lays hold of the projecting end of the wire : he then lets go his hold of the cord *h*, and thus allows the weight *g* to withdraw the tube into the trough. The wire thus introduced is woven in ; the preceding wire is then cut out and put into the tube. Lastly, the cap is put on, which completes the process. It is evident that the apparatus described is a substitute for the boy ; but as it requires to be worked by the weaver, it occupies some of his time, and, therefore, he will not be able to finish a piece of velvet so soon as another weaver of equal skill

and industry can, who has the help of a boy. The difference, therefore, between the cost of a boy's time, and the loss of time on the part of the weaver, is the amount of the value of Mr. Sodo's invention.

A still more recent improvement in the tube has been made by Mr. Hanchard, who, finding that there was a considerable loss of time incurred in taking off the cap at one side, and reaching over to the other to put it on again for every wire, contrived the means of dispensing with caps entirely. It consists in using a tube *aa*, fig. 3, longer than the wire, with a smooth conical end *b* to enter under the pile, it having a hole in the side *b* to put in and take out the wire, and making the plug *c* movable, so that the assistant can push the wire *d* forwards enough for the weaver to take hold of it. For this purpose the plug *c* is fixed in a short tube *ee*, which can slide within the long tube *a*: in the tube *e* is screwed the handle *f*, and in the outer tube is made a slit *g*, just long enough for the requisite motion. A spiral spring extends



from the plug *c* to the peg *h*, for the purpose of keeping the plug back. When the assistant has put in the tube, across the ground, he pushes forwards the handle *f*: this causes the wire *d* to project beyond the cone *b*, as shewn by dotted lines; and as soon as the weaver has taken hold of the wire, the boy lets go the handle *f*, and pulls back the tube, ready to receive the previous wire. Fig. 4 shews the tube *e* and handle *f* separate. Fig. 5 shews the end *i* through which the spring passes. The parts of which this figure consists are connected in the following way. The spring is first made fast to the plug *c*, this latter having previously been firmly fixed in the tube *e*; the piece *i* is then to be slid on the spring, and this latter is then to be made fast to the stopper *h*. The length of the spring is to be so adjusted, that when in a state of rest the end of *e* shall be in close contact with the shoulder of *i*, and shall be capable of extending the whole length of the space *g*, fig. 3, without straining.

No. II.

LOOM FOR WEAVING SILK TISSUE.

The SILVER ISIS MEDAL and TEN POUNDS were presented to Mr. J. DOVE, 9 Surat Place, Green Street, Bethnal Green Road, for his improved Apparatus for Weaving Silk Tissue.

ABOUT four years ago (see Vol. L.), the Society rewarded Mr. Rooke for improving the jacquard loom, by adding a small one to it, and thereby saving many repetitions of